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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,021	07/24/2003	Darin D. Lindig	10002404-3	9974

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EXAMINER	
LARKIN, DANIEL SEAN	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,021	LINDIG, DARIN D.	
	Examiner	Art Unit	
	Daniel S. Larkin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-11 and 13-20* is/are rejected.

7)☐ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 9-11, and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,934,140 (Jackson et al.) in view of JP 63-62752 (Watanabe et al.).

With respect to the limitations of claims 1, 6, 9, and 13, the reference to Jackson et al. discloses a paper property sensing system comprising a reproductive device/printer (9); a surface engaging member/sensor arm (112) configured to physically engage a paper sheet surface (116), the sensor arm (112) comprising a flexure material body, as shown in the figures, that is supported in a cantilevered disposition proximate a piece of paper (116) to be printed upon by the paper; a light source/LED (120); and a position detector (122) positioned to detect light from LED (120) deflected by the sensor arm (112). The reference fails to explicitly recite a reflective member joined with the surface engaging member; however, the Examiner argues that the sensor arm (112) has some reflective means in order to allow light from the LED to contact the position detector (122) via the sensor arm (112). The reference to Jackson et al. fails to disclose a detection mechanism that measures roughness of a paper surface.

The reference to Watanabe et al. discloses a thermal transfer printer having the ability to obtain a high grade printing capability by measuring the roughness/smoothness of the surface (1a) of paper (1) being transferred. The smoothness detector is comprised of a cantilevered probe attached to a base at one end and having a stylus tip (10) mounted at the free end of the cantilever to engage the paper surface (1a). Deflection of the stylus (10) due to the unevenness of the paper surface (1a) is detected by a pickup (11) and used in a correction circuit (15) for purposes of determining ink characteristics as it relates to the surface characteristics of the paper (1). Modifying the flat end of the sensor arm utilized in Jackson et al. with a probe tip as shown in Watanabe et al. would have been obvious to one of ordinary skill in the art as a means to more accurately detect the surface texture of the print media as a means of ensuring high grade printing.

With respect to the limitation of claims 2, 7, 10, and 14, the reference to Jackson et al. discloses the use of a controller (38) that controls and coordinates the operations of the reproductive machine (9). The reference further states that the various measurements gathered may allow one to enable control of proper paper paths and process parameters, like fuser temperature (col. 8, lines 51-54).

With respect to the limitations of claims 3 and 11, the Examiner argues that in light of the fact that Jackson et al. disclose a controller (38) that enables one to control process parameters; and the detection of the paper surface is monitored through light reflecting from the cantilever (112) to a position detector (122), the reference has the teaching to convert a position measurement into a process control signal in combination

with the teachings of Watanabe et al. which measures surface roughness of a paper product.

With respect to the limitation of claim 4, the reference to Jackson et al. discloses that the flexure body (112) may be metal as used in the embodiments of Figures 2A and 2B. The Examiner argues that providing a metal cantilever is well known in the art as means of providing a rugged yet sensitive surface engaging device.

With respect to the limitation of claim 5, the reference to Jackson et al. discloses a flexure body (112) having first and second ends. The reference fails to explicitly disclose if the flexure body tapers between the two ends. The Examiner argues that tapering a cantilever is a choice of design which is well known to those of ordinary skill in the metrology art, and one would be motivated to taper the cantilever as a means of providing a very thin and sensitive tip to contact the paper surface while providing a larger support side of the cantilever.

With respect to the limitations of claim 8, the reference to Jackson et al. discloses a paper property sensing system comprising a reproductive device/printer (9); a paper property sensor system (100); and a control system (38) coupled to the paper property sensor system (100) for modulating one or more print parameters, like fuser temperature (col. 8, lines 51-54). The reference to Jackson et al. fails to disclose a detection mechanism that measures roughness of a paper surface.

The reference to Watanabe et al. discloses a thermal transfer printer having the ability to obtain a high grade printing capability by measuring the roughness/smoothness of the surface (1a) of paper (1) being transferred. The

smoothness detector is comprised of a cantilevered probe attached to a base at one end and having a stylus tip (10) mounted at the free end of the cantilever to engage the paper surface (1a). Deflection of the stylus (10) due to the unevenness of the paper surface (1a) is detected by a pickup (11) and used in a correction circuit (15) for purposes of determining ink characteristics as it relates to the surface characteristics of the paper (1). Modifying the flat end of the sensor arm utilized in Jackson et al. with a probe tip as shown in Watanabe et al. would have been obvious to one of ordinary skill in the art as a means to more accurately detect the surface texture of the print media as a means of ensuring high grade printing.

With respect to the limitations of claims 15-18, the reference to Jackson et al. discloses a paper property sensing system comprising a reproductive device/printer (9); a surface engaging member/sensor arm (112) configured to physically engage a paper sheet surface (116), the sensor arm (112) comprising a flexure material body, as shown in the figures, that is supported in a cantilevered disposition proximate a piece of paper (116) to be printed upon by the paper; an electromagnetic radiation emitting device/LED (120); and a sensor/position detector (122) positioned to detect light from LED (120) deflected by the sensor arm (112). The reference fails to explicitly recite a reflective member joined with the surface engaging member; however, the Examiner argues that the sensor arm (112) has some reflective means in order to allow light from the LED to contact the position detector (122) via the sensor arm (112). The reference to Jackson et al. fails to disclose a detection mechanism that measures variations along the surface of the medium/paper.

The reference to Watanabe et al. discloses a thermal transfer printer having the ability to obtain a high grade printing capability by measuring the roughness/smoothness of the surface (1a) of paper (1) being transferred. The smoothness detector is comprised of a cantilevered probe attached to a base at one end and having a stylus tip (10) mounted at the free end of the cantilever to engage the paper surface (1a). Deflection of the stylus (10) due to the unevenness of the paper surface (1a) is detected by a pickup (11) and used in a correction circuit (15) for purposes of determining ink characteristics as it relates to the surface characteristics of the paper (1). Modifying the flat end of the sensor arm utilized in Jackson et al. with a probe tip as shown in Watanabe et al. would have been obvious to one of ordinary skill in the art as a means to more accurately detect the surface texture of the print media as a means of ensuring high grade printing.

With respect to the limitation of claims 19 and 20, the reference to Jackson et al. discloses the use of a controller (38) that controls and coordinates the operations of the reproductive machine (9). The reference further states that the various measurements gathered may allow one to enable control of proper paper paths and process parameters, like fuser temperature (col. 8, lines 51-54).

Response to Arguments

3. Applicant's arguments filed 20 July 2005 have been fully considered but they are not persuasive.

The reference to Jackson et al. discloses an optical beam deflection apparatus

usable within a printing device to determine a characteristic of a paper material. Deflection of the cantilever due to the changes in the paper surface is detected using a photosensor. The reference to Jackson et al. fails to disclose using the cantilevered apparatus for specifically detecting roughness or smoothness of a medium/paper. The reference to Watanabe discloses a cantilever usable within a printer to detect the roughness of the paper. Deflections of the cantilever due to changes in the paper's roughness are detected using a pickup. Modifying the apparatus of Jackson et al. to measure surface roughness with a cantilever and optical deflection techniques would have been obvious to one of ordinary skill in the art because optical beam deflection is a very accurate and well known measuring technique used to determine surface roughness in various media and Watanabe further teaches that cantilevers may be used to detect the roughness of paper materials.

4. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art to US 6,731,886 (Takeda) discloses a surface discriminating device for a recording material comprising a cantilevered probe and a piezoelectric element mounted to the probe to detect deflections of the probe due to changes in the surface roughness of the recording material.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
17 October 2005

DANIEL S. LARKIN
PRIMARY EXAMINER